Amendments to the Claims:

This listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of Claims:

1. (currently amended) A method of determining environmentally induced degradation of a polymer, the method comprising the steps of:

adding conductive particles to the polymer to form a conductive composite comprising a preselected weight percent of conductive particles;

making an electrical connection with the conductive composite and measuring an electrical property of the conductive composite; and

equating ~~the measured~~ a change in the electrical property of the conductive composite~~, said measured electrical property consistent with a decrease in electrical resistivity,~~ with ~~an~~ the electrical property of a previously degraded sample of the conductive composite to determine the degradation of the polymer, the change in the electrical property consistent with a decrease in electrical resistivity.

2. (previously presented) The method of claim 1 wherein the measured electrical property is electrical resistivity.

3. (previously presented) The method of claim 1 wherein the measured electrical property is electrical conductivity.

4. (previously presented) The method of claim 1 wherein the degradation of the polymer is mechanical degradation of the polymer.

5. (previously presented) The method of claim 4 wherein the mechanical property comprises a durometer of the polymer.

6. (previously presented) The method of claim 4 wherein the mechanical property comprises an elongation property of the polymer.

7. (previously presented) The method of claim 4 wherein the mechanical property comprises a hardness of the polymer.

8. (previously presented) The method of claim 4 wherein the mechanical property comprises a tensile strength of the polymer.

9. (previously presented) The method of claim 4 wherein the mechanical property comprises a toughness of the polymer.

10. (previously presented) The method of claim 1 wherein the degradation of the polymer is a chemical degradation.

11. (previously presented) The method of claim 10 wherein the chemical degradation comprises a measure of oxidation of the polymer.

12. (previously presented) The method of claim 10 wherein the chemical degradation comprises a measure of a remaining amount of anti-oxidant added to the polymer.

13. (previously presented) The method of claim 1 wherein the previously degraded sample was degraded by an accelerated aging means.

14. (previously presented) The method of claim 13 wherein the accelerated aging means comprises aging in an environment elevated in temperature as compared to the normal operating temperature of the polymer.

15. (previously presented) The method of claim 13 wherein the accelerated aging means comprises aging in an elevated radiation environment.

16. (previously presented) The method of claim 13 wherein the accelerated aging means comprises aging in an elevated humidity environment.

17. (previously presented) A degradation sensor for a polymeric structure, the sensor comprising:
a first quantity of conductive particles dispersed in a first portion of the polymeric structure to define a conductive composite portion, the first portion comprising less than a total polymer in the structure; and
a means for communicating an electrical measurement of the conductive composite to an electrical measurement apparatus; and
a means for correlating a decrease in said electrical measurement consistent with a decrease in resistivity to an environmentally induced degraded condition of said polymeric structure.

18. (previously presented) The degradation sensor of claim 17 wherein the means for communicating an electrical measurement of the conductive composite comprises a portion of the conductive composite disposed on an outside surface of the polymeric structure.

19. (previously presented) The degradation sensor of claim 17 wherein the means for communicating an electrical measurement of the conductive composite comprises a metallic conductor communicating with the conductive composite.

20. (previously presented) The degradation sensor of claim 17 wherein the means for communicating an electrical measurement of the conductive composite comprises an electromagnetic emitter.

21. (previously presented) The degradation sensor of claim 20 wherein the electromagnetic emitter is a radio frequency identification tag.

22. (previously presented) The degradation sensor of claim 17 wherein the conductive composite defines a filament disposed in the polymeric structure.

23. (previously presented) The degradation sensor of claim 17 wherein the conductive composite defines an extruded strip in the polymeric structure.

24. (previously presented) The degradation sensor of claim 17 wherein the conductive composite defines a plurality of portions of conductive composite, said plurality of portions of conductive composite being separated from each other by portions of polymer without said conductive particles.

25. (previously presented) A polymeric structure comprising:
a degradation sensor for the polymeric structure, the sensor comprising:
a first quantity of conductive particles dispersed in a first portion of the polymeric structure to define a conductive composite portion, the first portion comprising less than a total polymer in the structure; and
a means for communicating an electrical measurement of the conductive composite to an electrical measurement apparatus ; and
a means for correlating a decrease in said electrical measurement consistent with a decrease in resistivity to an environmentally induced degraded condition of said polymeric structure.

26. (previously presented) The polymeric structure of claim 25 wherein the polymeric structure is the insulation of an electrical wire.

27. (previously presented) The polymeric structure of claim 25 wherein the polymeric structure is an electrical cable.

28. (previously presented) The polymeric structure of claim 25 wherein the polymeric structure is a pipe.

29. (previously presented) The polymeric structure of claim 25 wherein the polymeric structure is a building siding portion.

30. (previously presented) The polymeric structure of claim 25 wherein the polymeric structure is an aircraft composite structure.

31. (previously presented) The polymeric structure of claim 25 wherein the polymeric structure is a boat hull.

32. (cancelled)

33. (cancelled)

33. (cancelled)

34. (cancelled)

35. (cancelled)

36. (cancelled)

37. (cancelled)

38. (cancelled)

39. (previously presented) A method of determining environmentally induced degradation of a polymer, the method comprising the steps of:
adding conductive particles to the polymer to form a conductive composite comprising a preselected weight percent of conductive particles;
making an electrical connection with the conductive composite and measuring a resistivity of the conductive composite; and

equating the resistivity of the conductive composite with the resistivity of a previously environmentally degraded sample of the conductive composite to determine the degradation of the polymer;
wherein a decrease in a resistivity correlates to an age degraded state of the polymer.

40. (previously presented) The method of claim 39 wherein said degraded state of the polymer is a decrease in specific volume with age.

41. (previously presented) The method of claim 39 wherein said degraded state of the polymer is an increase in density of the polymer with age.

42. (previously presented) The method of claim 39 wherein said degraded state of the polymer is a reduction of elongation at break with age.

43. (previously presented) The method of claim 39 wherein said degraded state of the polymer is a loss of volatile fractions with age.

44. (previously presented) The method of claim 39 wherein said equating the resistivity of the conductive composite with the resistivity of a previously-degraded sample of the conductive composite is performed at several temperatures and Arrhenius methodology is used to predict the remaining life of the polymer.

45. (currently amended) A method of determining environmentally induced degradation of a polymer, the method comprising the steps of:
measuring the resistivity of a composite sensor made of said polymer and a conductive filler;
equating a reduction of resistivity of said composite sensor to ~~a~~ an environmentally degraded state of said polymer wherein said reduction of resistivity results from volumetric shrinkage of said polymer from aging.

46. (previously presented) The method of determining degradation of a polymer of claim 45 wherein said degraded state is a reduction of elongation of said polymer.

47. (previously presented) The method of determining degradation of a polymer of claim 45 wherein said degraded state is a densification of said polymer.

48. (previously presented) The method of determining degradation of a polymer of claim 45 wherein said degraded state is a loss of volatile components of said polymer

49. (previously presented) The method of determining degradation of a polymer of claim 45 wherein said sensor is disposed in a product made of said polymer.

50. (previously presented) The method of determining degradation of a polymer of claim 49 wherein said sensor is disposed on a surface of a product made of said polymer.

51. (previously presented) The method of determining degradation of a polymer of claim 49 wherein said product is electrical insulation.

52. (previously presented) The method of determining degradation of a polymer of claim 49 wherein said product is a polymeric aircraft structural part.